

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 49260	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/IT2004/000669	International filing date (day/month/year) 02.12.2004	Priority date (day/month/year) 09.12.2003
International Patent Classification (IPC) or national classification and IPC G01L17/00, G01L7/00, B60C23/00		
Applicant SISTEC S.R.L. et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ sent to the applicant and to the International Bureau a total of sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 28.06.2005	Date of completion of this report 03.11.2005
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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IT2004/000669

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-62 as originally filed

Claims, Numbers

1-33 as originally filed

Drawings, Sheets

1/39-39/39 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IT2004/000669

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-33
	No: Claims	
Inventive step (IS)	Yes: Claims	1-33
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-33
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following document:
D1: EP-A-0 893 284

- 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1 and shows (the references in parentheses applying to this document):

A device for monitoring tyre pressure which comprises:
a body 4 with a thread for connecting to the valve of a tyre;
an external housing 1 which slides between first and second positions with respect to the body 4 (col. 5, lines 18-22) when an external force is applied;
a plunger incorporating a chamber 17 sealed by a deformable diaphragm 18 and a valve 22 fitted with a double closing device.

The plunger is attached to bellows which separate two chambers: one chamber is located above the plunger and the other chamber is located beneath the plunger. An external force applied to the external housing causes the diaphragm to deform downwards and plunger to be displaced downwards. This causes the tyre valve to open and air from the tyre enters the device and fills both chambers below and above the plunger. Chamber 17 sealed by the diaphragm remains sealed by the two-way valve and contains the reference pressure. When the external force is released, the diaphragm remains downwardly deformed as long as the pressure of air from the tyre is greater than the pressure in reference chamber 17. The force on the diaphragm also ensures that the plunger remains in a depressed condition maintaining the tyre valve open for continued communication between the tyre and the device.

When the pressure in the tyre drops, the diaphragm bends upwards, thus closing the two-way valve 22. The plunger also rises and thus no longer exerts a force on the tyre valve and so the tyre valve closes.

The position of the diaphragm or the plunger is monitored to assess a pressure drop in the tyre.

- 2.2 A problem with the device of D1 is that the diaphragm is only stable in two geometrical configurations and therefore requires precise tolerances in manufacture.
- 2.3 Claim 1 overcomes this problem by redesigning the interior of pressure measuring device and providing further constructional features. In particular, a manoeuvre member 21 is provided which, on the one hand cooperates with a self-closing means to open and close the entrance room when the external housing moves between its two extreme positions (this is already the case in D1, where "manoeuvre means" 2 causes opening and closing of the "entrance chamber" 26) and on the other hand, serves to close the connection between the measuring chamber (in D1 this would be chamber 20), the input from the tyre and the external environment. The interior design of the device is such that the diaphragm is capable of moving the manoeuvre member. In other words, the diaphragm and manoeuvre member cooperate such that movement of the diaphragm causes closure of the connection between the measuring chamber, the valve of the tyre and the external environment. Moreover, a spring is provided which acts on the diaphragm to counteract the pressure in the measuring chamber. This spring force causes movement of the manoeuvre means such that the closure means seals the entrance room when the pressure in the measurement chamber is lower than a threshold value.
- 2.4 This construction has the advantage that the diaphragm cooperates with a spring and thus operates on the basis of equilibrium of forces of pressure and elastic counterforces. The diaphragm is therefore easier to manufacture than the diaphragm of D1 which has a variable geometric configuration. Moreover, the elastic reactions of the springs are constant over time whereas the gaskets of D1 deform with age and cause leakage.
- 2.5 The subject matter of claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) since none of the search report citations disclose or suggest such a construction.
3. Claims 2-33 are dependent on claim 1 and as such also meet the requirements of the

PCT with respect to novelty and inventive step.

Re Item VIII

Certain observations on the international application

1. The application does not meet the requirements of Article 6 PCT, because the claims are not clear in the following respects:
 - 1.1 Claim 1 is directed to a device for surveying the pressure of fluids, yet makes no reference to any features of the actual surveying means: claim 1 is directed to the structural features of the device but omits to mention the presence of any pressure sensing features. The pressure sensor is only mentioned in claim 10 for the first time. Since independent claim 1 makes no reference to any features which enable the pressure to be detected, it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.
 - 1.2 Moreover, the claim dependencies are incorrect. For example, claims 11 and 12 are dependent on claim 1 but concern features of the sensors, which are only mentioned in claim 10 for the first time. Similarly, the "electric conditions" of claim 13 are not mentioned in claim 1 on which it is dependent, but only in claim 12.